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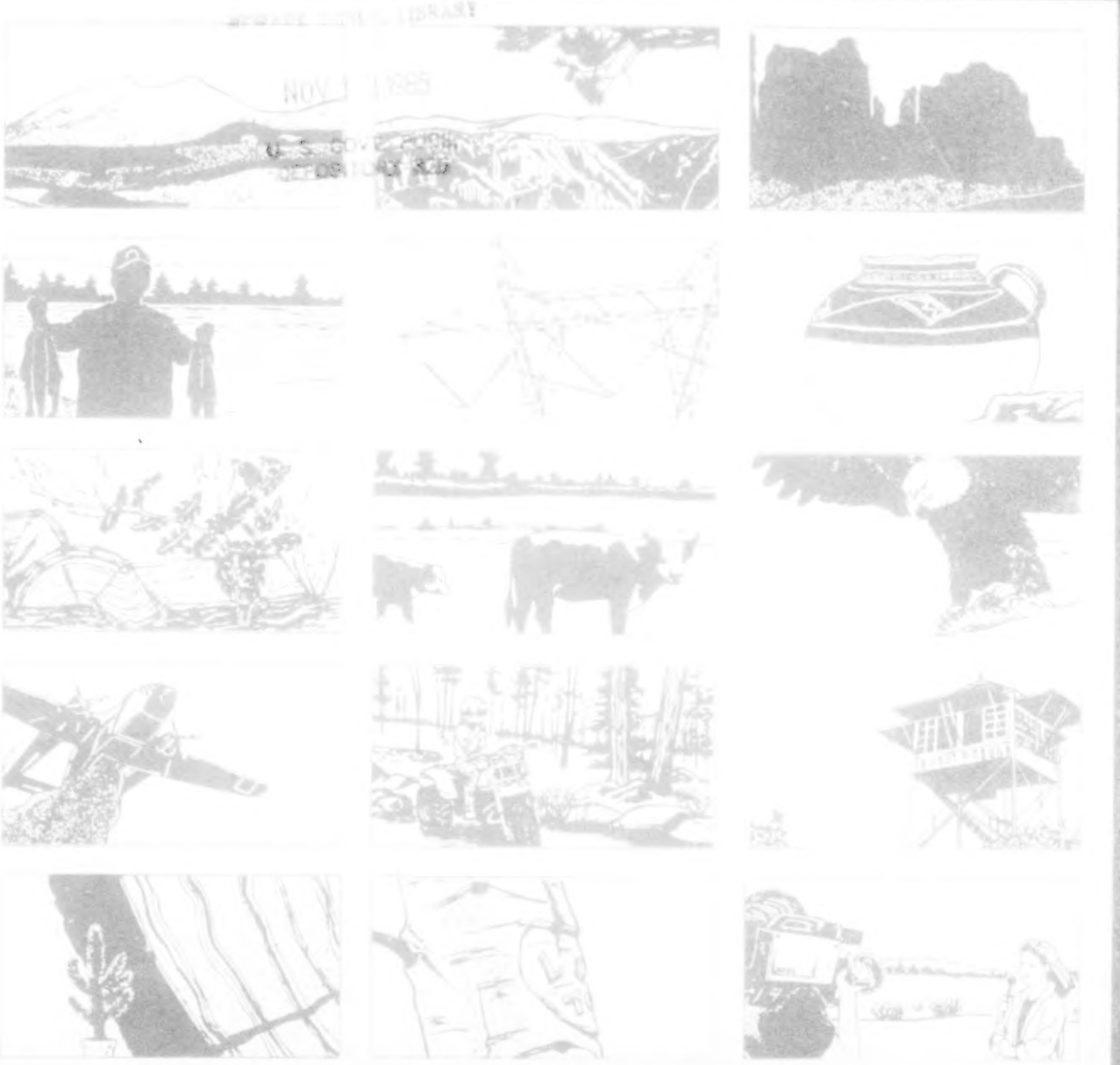
United States Department of Agriculture

Forest Service

Southwestern Region

November 1985

Summary of the Draft Environmental Impact Statement for the Coconino National Forest Proposed Plan



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Vicinity Map

Summary of the Draft Environmental Impact Statement

THE PROBLEM

Current management of the Coconino National Forest (Forest) does not adequately address current, significant issues involving people competing for limited resources. The demand for such things as wildlife, firewood, lumber, water, minerals, recreation opportunities, beautiful views, old-growth forests, and solitude is rapidly exceeding supply. Simply put, there aren't enough resources to give everyone what they want. This situation is getting more complex as the population in the State grows.

Recognizing that people's needs for resources are outstripping supplies, Congress enacted the Forest and Rangeland Renewable Resources Planning Act of 1974 (RPA), directing the USDA Forest Service (Forest Service) to prepare Land and Resource Management Plans (Forest Plans). The Forest Service had long been planning future resource management in Multiple-Use Plans and individual area plans. But, in 1980, the Forest Service began a comprehensive program to plan the future of all the National Forests for the next 50 years.

The Forest Plan is our answer to Congress' mandate. In the Forest Plan, we explain in detail what we would do to resolve the significant Issues confronting all of us today. We talk about our goals and the direction we want to take. And we explain what standards and what guidelines we would use to get where we want to go.

To develop our Forest Plan, we analyzed our current situation, gathered data, formed alternative management methods, and then used computers and experience to help us choose what we believe is the best course of action--the Proposed Forest Plan.

The analysis we went through is documented in the Environmental Impact Statement (EIS) for the Forest Plan. In the EIS, we discuss at length the data we collected, how we interpreted the data, what alternatives we came up with, and the effects of each alternative, including the Forest Plan, on the environment.

It took 5 years to complete our Forest Plan and EIS. Much of the information presented is in great detail and not useful to the casual reader. We have tried to make both documents readable and understandable. This summary serves to simply and clearly give the reader an overview of a sometimes staggering, but very necessary and important, process.

In the summary, our intention is to explain the Issues that caused us to begin planning in the first place. We then discuss the Proposed Forest Plan and the alternatives to it in terms of what each alternative would do and how each alternative would effect the environment. Finally, we explain the choice we made in terms of how the Forest Plan differs from current management.

The Summary does not attempt to capsulize the tremendous volume of information presented in the Forest Plan and EIS. If, for example, you want to know how many acres of commercial timber lands we have, or what the average road

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maintenance funding by alternative will be, please look for the information in the Forest Plan and EIS. An Index, Glossary, and Reader's Guide have been provided to help you find the information.

THE ISSUES

If no one had any problems with current management, we would not have needed a Forest Plan. We would simply have written a letter saying that people and wildlife have, and can get, enough firewood, wildlife habitat, and fresh air, and we don't need to revise our current management. But that is not the case.

Our first task was to identify the significant Issues or conflicts that we would try to resolve through the planning process. The details of what we did, who we talked to, what people said, and the Issues that came out of the process are found in the EIS Chapter 1, EIS Appendix A, in the planning record and in a technical report entitled Identifying the Issues.

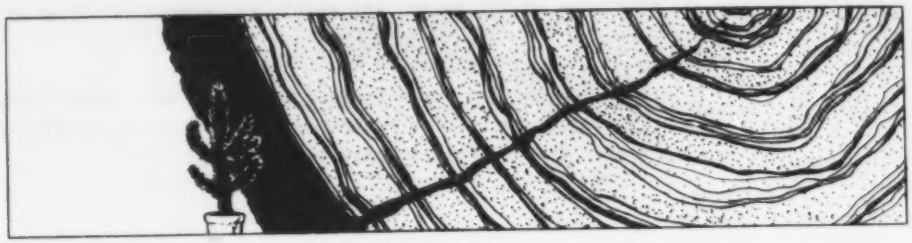
A short discussion of each Issue follows that tells what the Issue is, what the trade-offs are between Issues, and how the Forest Plan resolves each Issue.

Firewood

People burn a lot of firewood to heat their homes. In the past, the supply has been plentiful and relatively easy to get to. In recent years, as more people are demanding more firewood, the supply of every kind of firewood but ponderosa pine has decreased and the firewood is harder to find than ever before. Sometimes, what firewood there is is hard to get to because some roads aren't in very good shape.

The Forest Plan would provide enough firewood for everyone through the first decade. Most of the firewood would be ponderosa pine, not currently popular with most people, but in abundant supply over most of the Forest. By Decade 5, the Forest would supply 71 percent of demand.

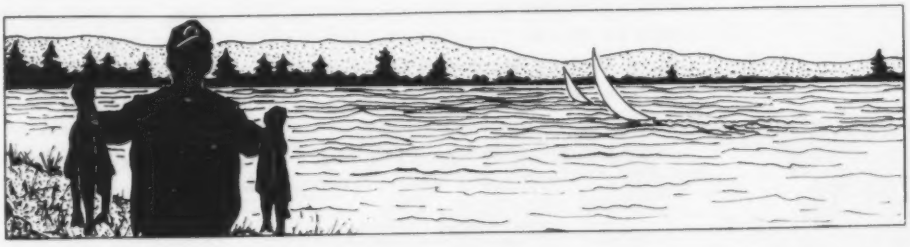
Timber Harvest



People need lumber to build with. Unlike many crops, trees take many decades to grow, even in the best of conditions. Wildlife, recreationists, and a host of others need trees of all ages, and timbered lands, for different reasons. Letting other users use timber lands for anything other than timber production could hurt long-term timber productivity.

The Forest Plan would meet sawtimber demand through Decade 5.

Recreation



Everyone we talked to throughout the planning process likes to do something in the Forest for recreation. Whether it's hunting, picnicking, hiking, camping, skiing, horseback riding, or driving off the beaten path, the Forest offers some form of recreation for almost everyone. Problems arise when one person's form of recreation interferes with someone elses. Cross-country skiiers don't get along with snowmobilers. The former enjoys solitude and quiet. The latter prefers high speed, noisy excitement.

We have thousands of acres of Forest available for camping where there are no facilities like showers or tables. We call this form of recreation "dispersed" because people who do it scatter out across the Forest to camp and play wherever they like. Developed recreation is concentrated around campgrounds that have facilities or boat ramps on lakes. We have plenty of opportunities for dispersed recreation. But we're short on developed areas. Developed areas are expensive to build and maintain.

The Forest Plan would meet 94 percent of demand for developed recreation in the first decade, and 78 percent in decade 5. The private sector would be expected to meet some of the demand for developed recreation sites not supplied by the Forest.

Dispersed recreation demands would be met in the Forest Plan, although the quality of the recreation experience would decline slightly over time as the population of the State increases.

Off-Road Vehicles

Probably no single form of recreation raises as many hackles or does as much resource damage as off-road vehicle (ORV) use. We need to drive off of the roads to gather firewood or find a nice camping area. Many people who are unable to hike depend on ORV's as their primary way to enjoy the Forest. On the other hand, nothing disturbs the peace and quiet quite like a three-wheeled motorcycle. And nothing damages the delicate environment of a wet meadow faster than a powerful four-wheel drive pickup truck. The two single biggest causes of erosion are road building and ORV use.

The Forest Plan would manage ORV use by limiting or prohibiting such use in sensitive areas, during wet weather, or during high fire danger. Ten thousand acres of the Cinder Hills northeast of Flagstaff would be left open to ORV's, and 40 thousand would be closed to protect the cinder cones and other features. Most of the Forest would be open unless posted closed.

Wildlife Habitat

The State of Arizona is responsible for managing the wildlife that inhabit the Forest. The Arizona Game and Fish Department monitors herds, sets hunting limits, and enforces game laws. The Forest Service is responsible to maintain or improve the Forest home or habitat where the animals live. A very important part of the Forest habitat is made up of old trees called old-growth. Old-growth trees also make the best logs for sawmills. The conflict here is between the needs of timber harvesters and the needs of wildlife habitat.

The acres of old-growth in the Forest Plan exceed minimum requirements by 17 percent, a 6 percent increase above current. The Forest Plan allows for a significant increase in old-growth acres in later decades if that is desired.

Riparian Habitat

In all of the Forest home, there is no single area as important to animals and people alike as riparian areas. Riparian areas are areas found around rivers, lakes, and other bodies of water. People like to be near the water. So do animals...including domestic livestock like cows and horses. In the past, overgrazing by cattle damaged many riparian areas, especially above the Mogollon Rim. Also, heavy recreation use by people along stream banks and lake shores compacts the soil, and has further degraded the riparian environment. The conflict is between the needs of wildlife who depend on riparian areas, and the needs of people and livestock who want to use riparian areas for their unique qualities.

The Forest Plan would bring 90 percent of riparian areas below the Mogollon Rim into satisfactory condition by the Decade 5, and 80 percent of the areas above the Rim into satisfactory condition by Decade 5.

Geothermal Development

The area around the San Francisco Peaks is a hot-bed of recent volcanic activity. Some geologists and energy companies believe there is a potential to find and develop sources of geothermal energy, by using hot rocks to create steam and steam to create electricity. The physical plant needed to produce geothermal energy is unattractive to most people, consisting of numerous pipes and towers, and can be a major impact on an area's beauty. The San Francisco Peaks and the surrounding area are a major scenic attraction, and the most sacred of the Navajo and Hopi sacred areas. The conflicts between the recreating public, religious and cultural needs of Native Americans, and the needs of geothermal developers make this a potentially volatile issue.

Under the Forest Plan, geothermal developers would not be allowed to occupy areas where visual quality is to be retained, or on slopes greater than 40 percent.

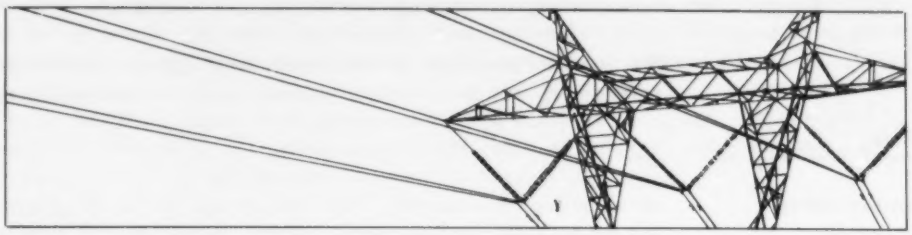
Transportation System

Without an effective transportation system, efficient Forest management is not possible. On the other hand, too many roads can result in unwanted damage and erosion. Forest engineers build very few new roads, but, rather, reconstruct the old roads needed to manage resources each year. Roads that are not needed should be obliterated and returned to grass or tree production, but the money is not always available to do so.

Some Forest roads are built for all weather conditions. Most, however, are impassable when wet and easily damaged by vehicle traffic. Without adequate roads, people can't get to firewood and other resources, and Forest personnel are unable to carry on their work. At issue here is how much of a transportation system we need, and built to what standard.

The Forest Plan would provide 1,275 miles of already existing roads, including 506 miles of heavily used roads that would be reconstructed and maintained to their original standard. No new arterial or collector roads would be built. Unneeded roads would be obliterated rapidly.

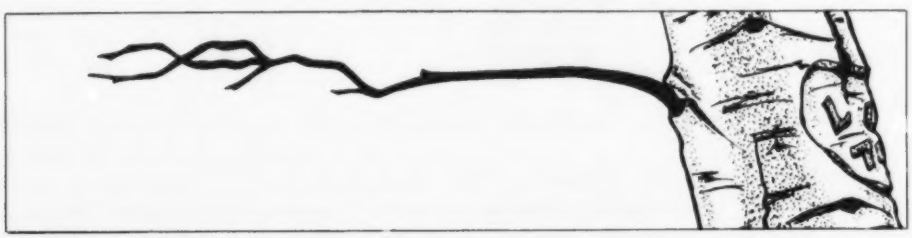
Uses of the Public Lands



The Forest is often the only, and usually a very convenient, source of land for individuals, companies, and communities to use for various purposes. Landfills, powerline corridors, sewer plants, junk storage, pipelines, driveways, and a host of other uses keep public lands from multiple-resource use. The land under a large powerline is not suitable for growing sawtimber. The land where a sewer plant lies will not produce grass or be available for recreation purposes. These uses amount to both public and private exclusive uses that generally limit public access and use, and limit resource production. At issue is when and where such uses are appropriate, and when and how much the public should be reimbursed for such use.

The Forest Plan would emphasize using existing energy corridors and would not allow new corridors in the timber type. New electronic sites would be chosen where resource impacts are slight and users can be consolidated. Land exchange or purchase would be favored where sewage plants most logically fit on Forest land.

Law Enforcement



Carving your initials on an aspen tree used to be a rite of youth. Most of us thought it was romantic or fun to leave our mark in the Forest. But carving your initials on an aspen tree damages the tree, leads to rot, and is considered misdemeanor vandalism. The Forest is not able to completely enforce the laws, rules, and regulations all the time. Firewood thieves, campground vandals, and others often get away with their depredations. The resulting

damage to resources and to people's Forest experience is costly and unfortunate. The issue involves getting people to obey the rules, hopefully voluntarily, but through enforcement, if necessary.

The Forest Plan would do the second best job of providing money for law enforcement and is a marked increase over current management.

Landownership Adjustment

As we write this summary, the front steps of the Flagstaff Medical Center sit on National Forest System lands...so do several Flagstaff public school sites. In addition, there are National Forest lands adjacent to, and intermingled with, growing communities. Obviously, these lands are not manageable for Forest resource production. We have a program of exchanging such lands, usually near or in communities, for private lands in the Forest that we can better use to produce resources or gain public access to important Forest areas. People who live near Forest lands that are classified as base-for-exchange are not happy when such lands are exchanged because they lose the amenity of being adjacent to Forest land.

The Forest Plan would identify 36,890 acres of land as desirable for the Forest to acquire to help management. Almost 17,650 acres would be identified as base-for-exchange. These lands have value for Forest management, are lands that can resolve problems or provide access, and are lands that offer room for expanding communities.

Public Affairs

An informed and participating public is essential to Forest management. We received numerous comments from people asking that we do a better job of keeping them informed about Forest management so they could help us by obeying the rules, following policies, and reporting problems. We agree that there is a significant opportunity to enhance resource management by actively informing and appropriately involving the public in the management process.

The Forest Plan would include an ambitious, full-time public information and involvement program to make sure that we anticipate people's needs and that we hear what people tell us.

Volunteers

Another opportunity to enhance resource management is using volunteers to help us do our work. We have successfully used volunteers to do resource management for years, and we are using more and more each year as budgets decrease.

The Forest Plan would continue the excellent volunteer program. The program would be managed by a central coordinator, open to ideas to take advantage of every opportunity people would provide to help out.

WHAT THE ALTERNATIVES DO

We have developed a series of figures to graphically compare the alternatives to each other, first, in terms of how each alternative addresses each Issue in the first decade and, second, in terms of other comparable factors such as economic factors.

Figures 1 through 15 are shown in terms of the first decade where possible because that is the effective life of the Forest Plan; 10 to 15 years. The projections for all five decades may be found in Chapters 2 and 4 of the EIS.

Each alternative was carefully screened to make sure it met legal and regulatory requirements. Each alternative had to be physically and fiscally achievable. It would not have been reasonable, for example, to explore an alternative that cost 100 million dollars annually. The alternatives were bridled by a reasonable range of budgets so that we looked at the lowest budget it would take to manage the Forest and we looked at the highest budget we could reasonably expect to get that would successfully resolve the Issues. We did not look at the highest possible budget, a theoretical exercise that would not have been feasible to implement.

Briefly, each alternative can be described by what it emphasizes.

Alternative PA, the Forest Plan, emphasizes resolving the Issues while producing a mix of commodities and amenities within expected budget constraints.

Alternative A, No Action, continues current management. The situation would not change from the present.

Alternative B is the Resources Planning Act (RPA) alternative. It emphasizes meeting production quotas assigned by the Regional Office in a document called the Regional Guide.

Alternative C emphasizes producing commodities such as sawtimber, grazing, and developed recreation.

Alternative D emphasizes amenities like visual quality, dispersed recreation, wilderness recreation, wildlife recreation, and minimizing soil movement.

Alternative E is the alternative that provides for the lowest level of investment and the lowest level of forest management.

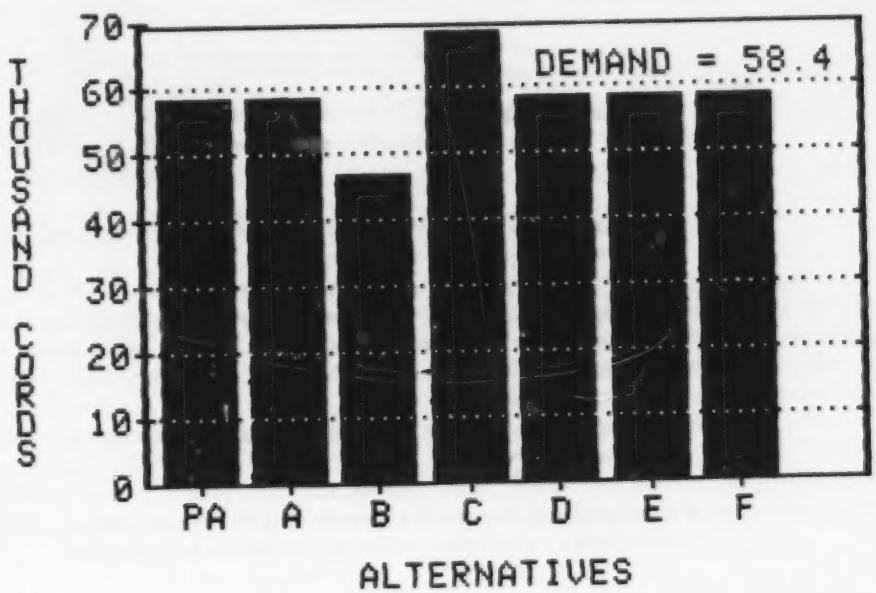
Alternative F emphasizes resolving the Issues to the highest possible degree while meeting RPA quotas where economically feasible.

Firewood

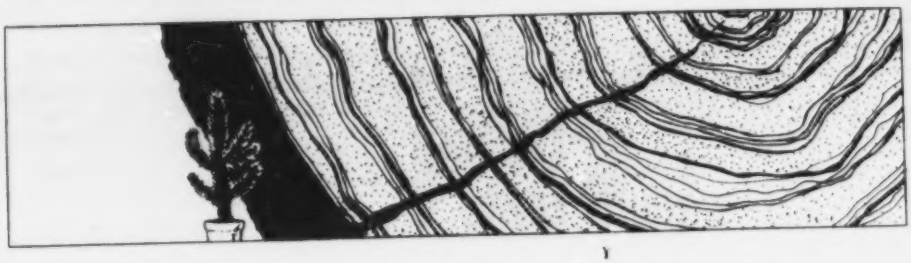
All alternatives except B would meet first decade demand as shown in Figure 1. Alternative C would export some firewood outside the area. Alternatives PA, D, and F would provide more green aspen firewood than the others. In all alternatives, most of the available firewood would be ponderosa pine.

Figure 1

Total Available Firewood and Estimated Demand in Decade 1 by Alternative in Thousand Cords



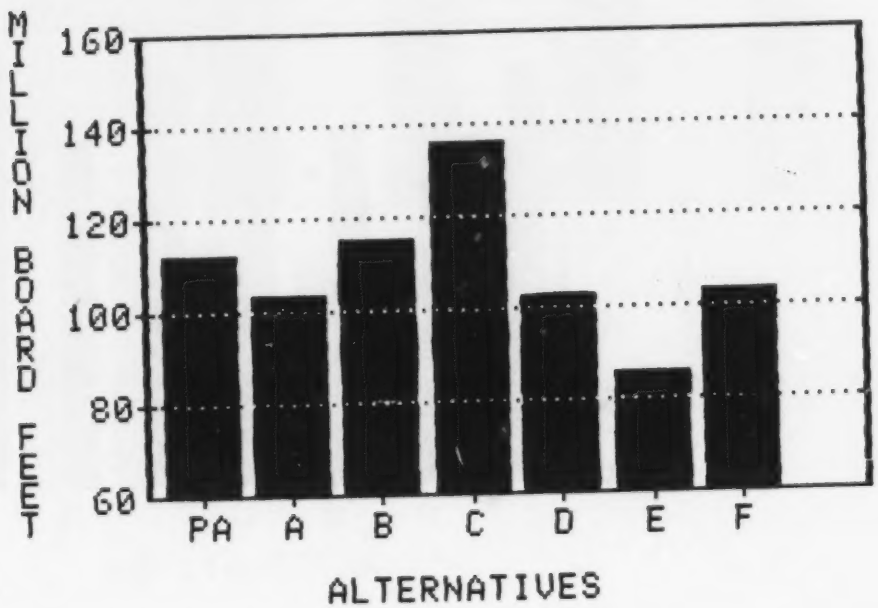
Timber Harvest



Net merchantable timber volume is defined as all of the various timber products that have commercial value. Larger trees are used for lumber. Smaller trees are used for pulp to make paper, and posts and poles for such things as fences. Green merchantable timber is also sold for firewood. Figure 2 displays total net merchantable timber volume by alternative.

Figure 2

Total Net Merchantable Timber Volume by Alternative in Million Board Feet/Year

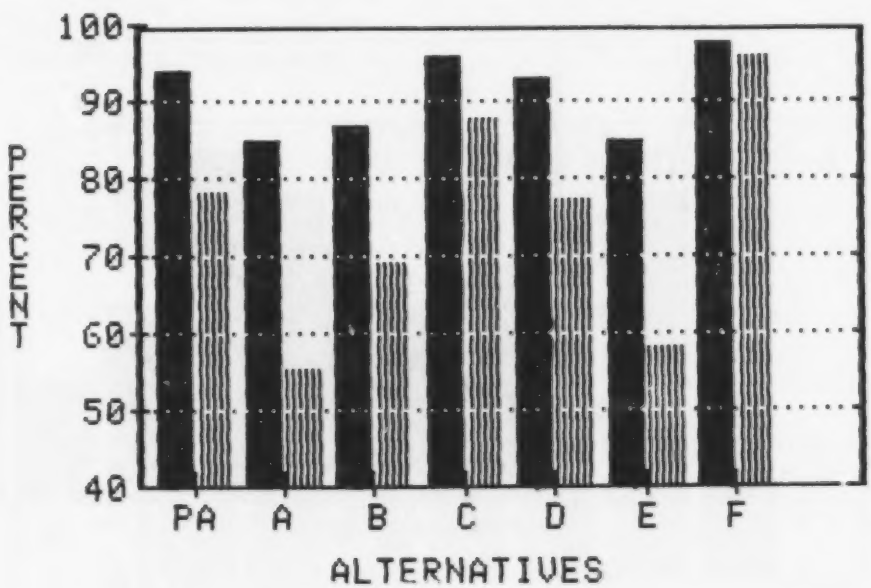


Recreation

Meeting future demands for developed recreation means adequately maintaining and rehabilitating existing sites and constructing new sites. Our ability to meet developed recreation demand is directly related to the budget available in each alternative. The percent of demand met in Decades 1 and 5 is displayed in Figure 3.

Figure 3

Percent of Estimated Demand Met by Alternative for Developed Recreation in Thousand Recreational Visitor Days/Year in Decades 1 and 5*

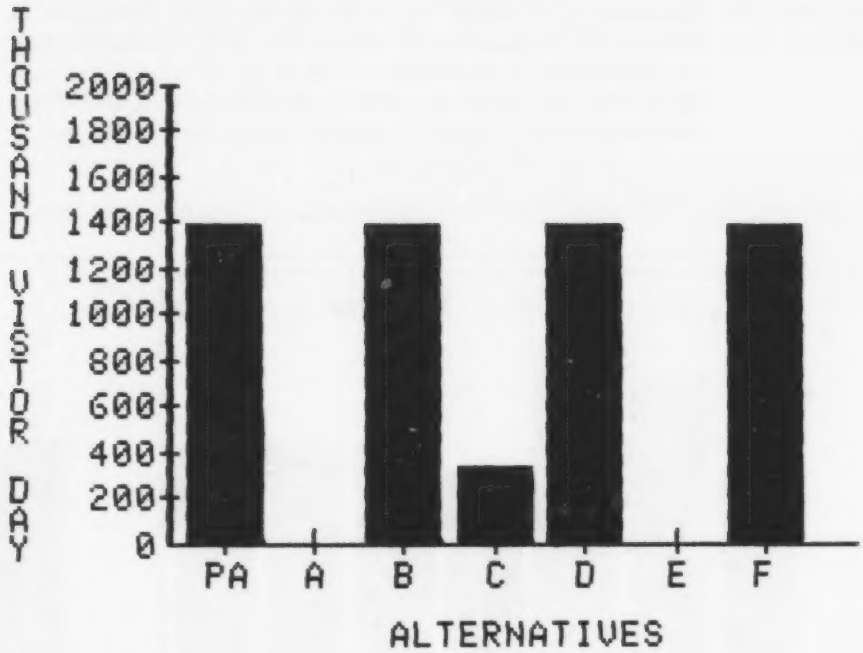


*Left hand bar is Decade 1, right hand bar is Decade 5.

Managing dispersed recreation at the Standard Service Level refers to managing an area to established standards. Sometimes we are unable to manage an area in the best way be know how because we lack the people or the money to do so. This is called less than Standard Service Level. Figure 4 displays dispersed recreation output in Recreational Visitor Days (RVD's) at the Standard Service Level. An RVD is one person recreating in the Forest for 12 hours.

Figure 4

Dispersed Recreation Output in MRVD's/Year at the Standard Service Level by Alternative in Decade 1

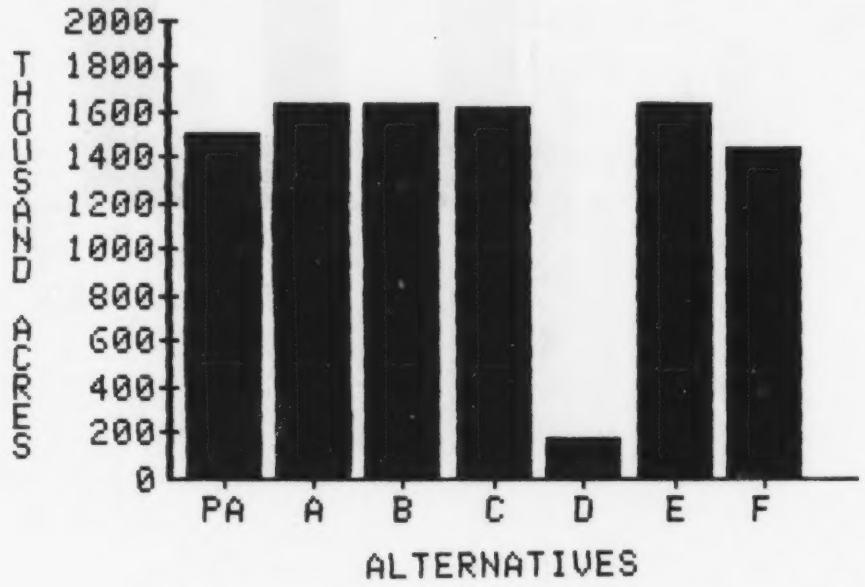


Off-Road Vehicles

Most of the Forest would be closed to ORV use to protect other amenity values in Alternative D. Most of the Forest is open to use in the other alternatives except in wildernesses and other special areas. Alternative F closes the most acres both permanently and seasonally. Alternative PA would establish 10 thousand acres of the Cinder Hills as an ORV area. The rest of the Cinder Hills would be closed to protect the areas unique scenic and geologic characteristics. Figure 5 displays acres open to ORV use.

Figure 5

Acres Open to ORV Use by Alternative in Thousand Acres

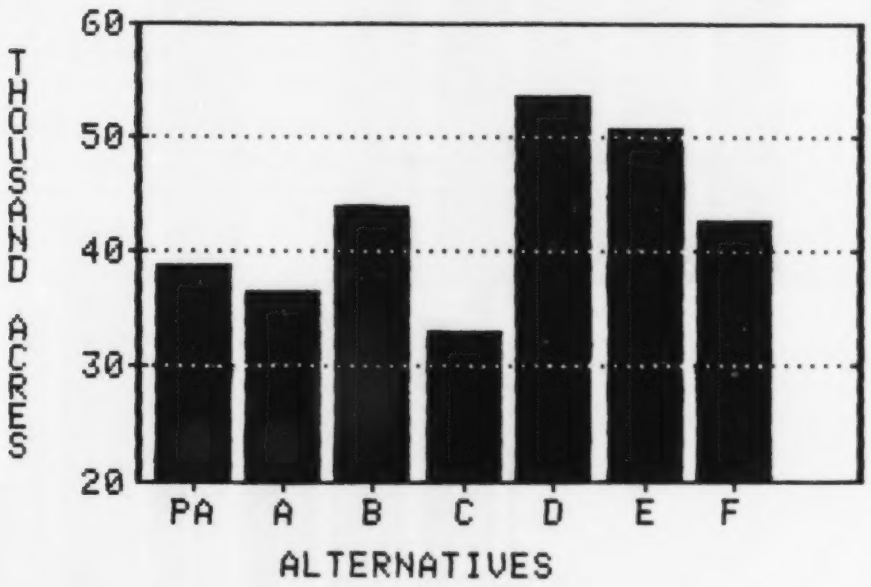


Wildlife Habitat

All alternatives include 18.6 thousand acres of old-growth trees in unsuitable timber lands including wildernesses, Research Natural Areas, and steep slopes unsuitable for timber harvest. Acres of old-growth are displayed in Figure 6.

Figure 6

Acres of Old-Growth in Thousands of Acres by Alternative in all Decades*

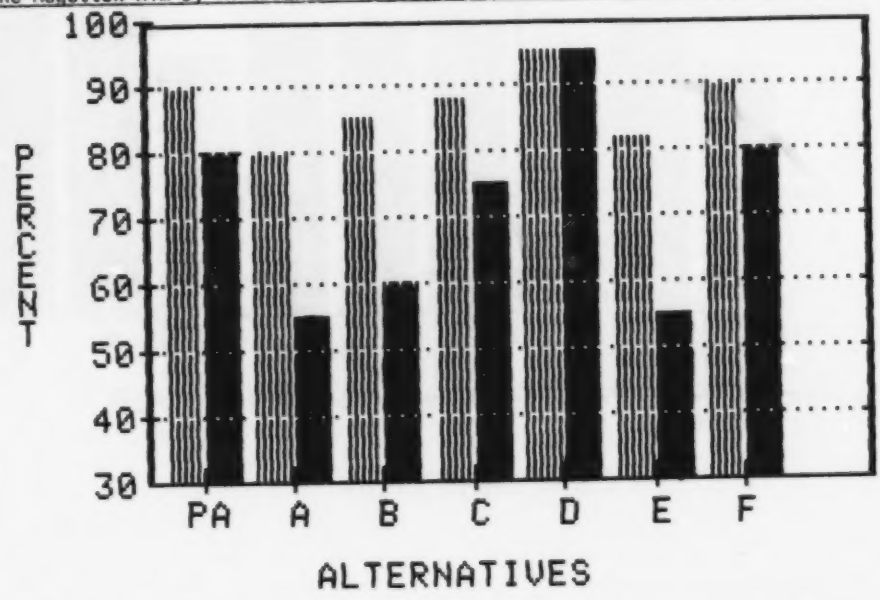


Riparian

Riparian habitat is described in terms of its desired future condition in Decade 5. The biological condition is different between the country below the Rim and above the Rim. Below the Rim, riparian areas are more easily rehabilitated because of the lack of grazing animals and intense use. Over 80 percent of the area is already in satisfactory condition. Above the Rim, fluctuating water tables and grazing by wildlife and cattle make rehabilitation difficult. Only 50 percent of the area above the Rim is in satisfactory condition now. Figure 7 displays percent of acres of riparian habitat in satisfactory condition in Decade 5.

Figure 7

Percent of Riparian Habitat Acres in Satisfactory Condition Above and Below the Mogollon Rim by Alternative in Decade 5



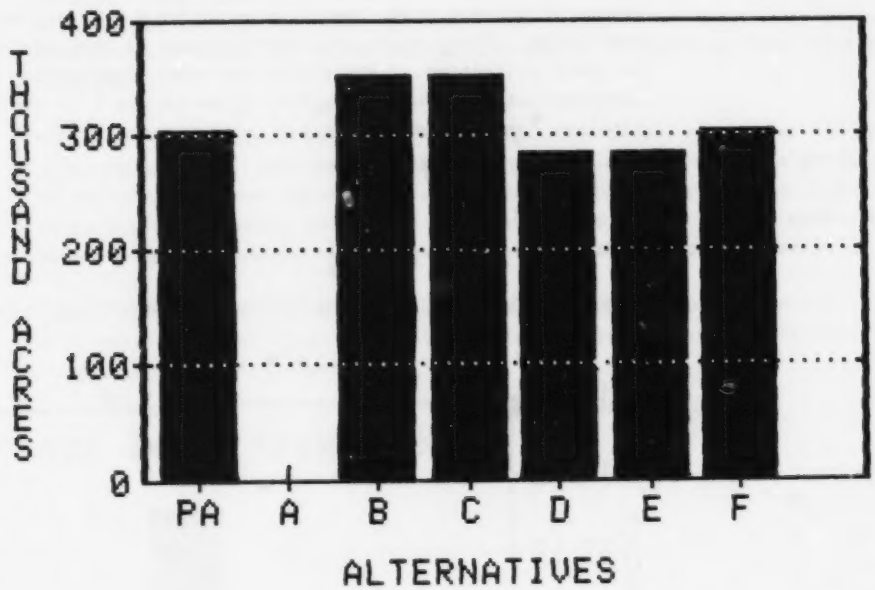
Left hand bar is area below the Rim, right hand bar is area above the Rim.

Geothermal

The number of acres available for geothermal leasing north of Interstate 40 are shown in Figure 8. There is no known geothermal potential on the south side of the Forest. Some acres are available for leasing but surface occupancy is not allowed because they are visually sensitive. Some acres are withdrawn or exempted from leasing because they are special areas like wildernesses. Chapter 2 of the EIS details geothermal leasing availability.

Figure 8

Geothermal Leasing Acres Available with Standard Stipulations in Thousands of Acres by Alternative



Transportation System

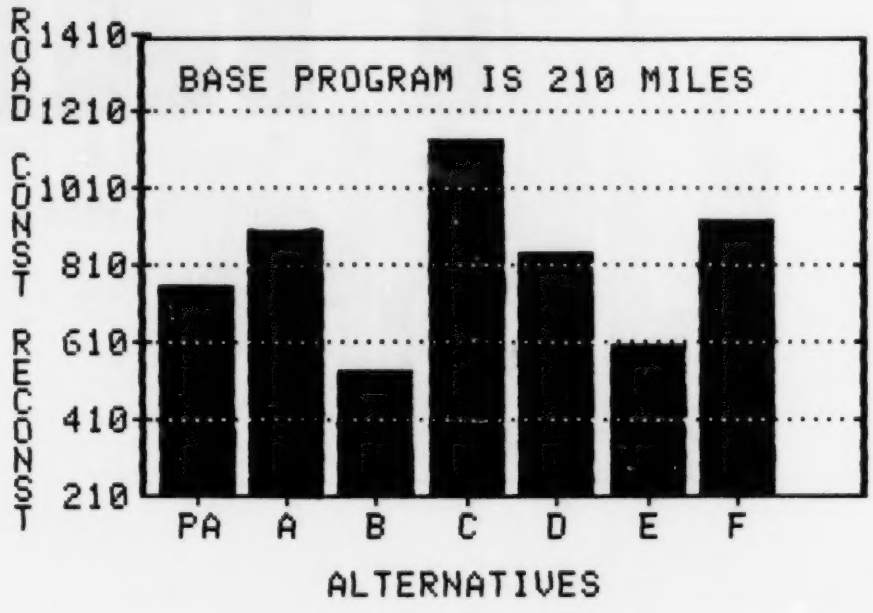
A base road program was established that would be included in all alternatives. The base program would have 1,275 miles of roads, 506 miles of which would have heavy use and would be maintained in the same condition they were in when first built. Of these, 210 miles would be reconstructed in the first decade. The remaining roads in the base program would be reconstructed as they were needed. The alternatives propose various levels of expenditures above the base program, with the majority of miles being reconstruction of local (low use) roads as a part of timber sales.

Some roads are built by the Forest Service and paid for directly out of the budget. This is called capital investment. Other roads are built by timber purchasers and they are given an amount of timber equal to the cost of the roads they build. This is called purchaser credit.

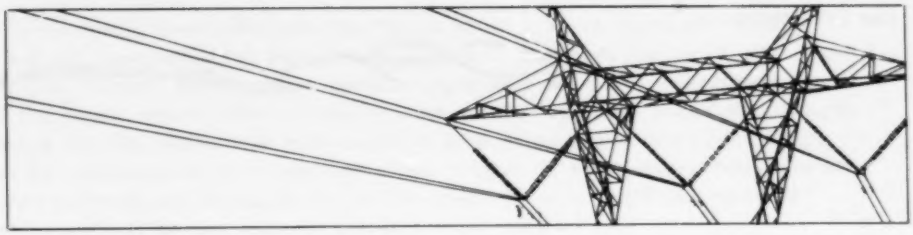
Nearly all Forest roads needed to manage and protect resources have already been built. These roads are reconstructed as they are needed for timber sales or other activities. Very little new road construction takes place. New road construction would end altogether after Decade 1 in the Forest Plan. Figure 9 displays road reconstruction and construction in miles.

Figure 9

Road Reconstruction and Construction by Alternative in Decade 1 in Miles



Use of Public Lands

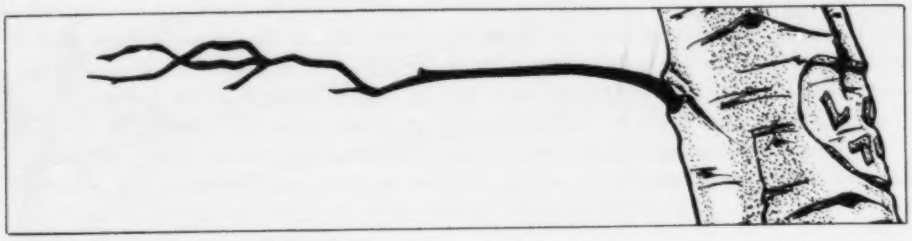


Page 57 of the EIS describes how each alternative would treat land uses. Alternatives PA, B, E, and F would emphasize using existing energy transmission corridors. New corridors would not be allowed in the ponderosa pine and mixed conifer timber types. Alternative A would not exclude the timber type. Alternative C would minimize impacts of new corridors on the timber type. Alternative D would not allow any new corridors, although existing ones could be expanded.

In Alternatives PA, A, B, E, and F, applications to put electronic equipment on existing sites are considered on a case-by-case basis. New sites are analyzed to minimize resource impacts and consolidate users. Under Alternative C, new sites would be readily available, although uses would have to be compatible. Alternative D would not allow any new sites and no expansion of existing sites.

Forest lands would not be used for sewage plants and landfills in any alternative, except where overriding environmental factors dictate that the Forest is the most logical site.

Law Enforcement

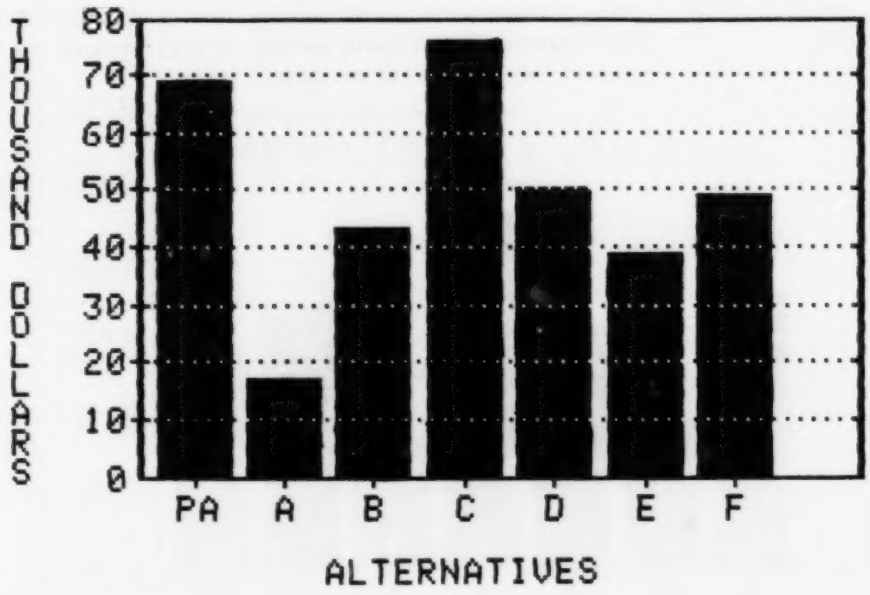


Law enforcement dollars are used for resource protection for such things as firewood patrol and enforcement, protecting cultural resources, and for providing visitor protection by such means as campground patrols.

The alternatives propose different levels of dollars for law enforcement as shown in Figure 10.

Figure 10

Law Enforcement Dollars by Alternative in Thousands of Dollars

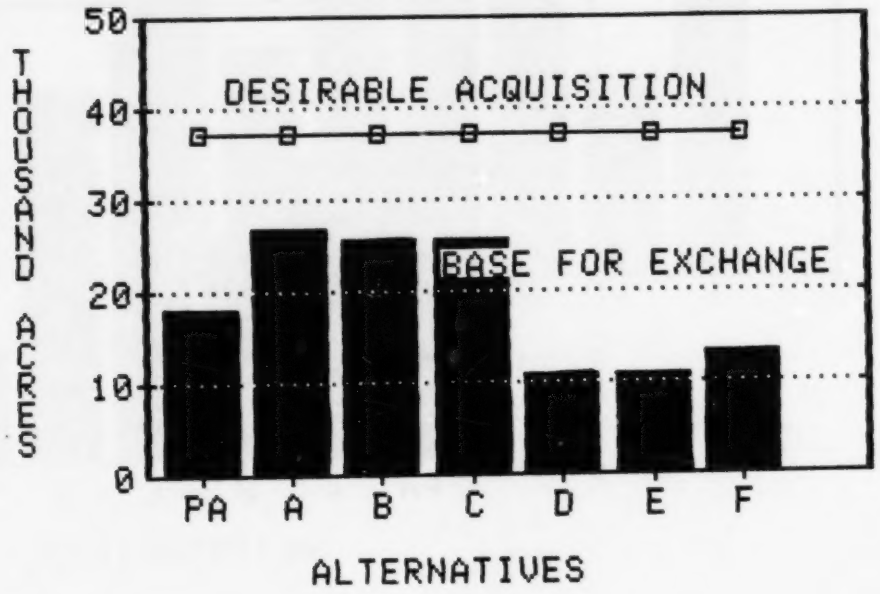


Landownership Adjustment

Base-for-exchange lands are land the Forest would like to trade off because they are not manageable for resource production. Examples are lands surrounded by private property and lands in towns. Lands desirable for acquisition are lands the Forest would like to acquire because they would be good for producing resources or they would help management in some other way such as providing access to a wilderness or recreation area. Figure 11 shows acres available as base-for-exchange and acres desirable for acquisition. Lands desirable for acquisition would be the same for all alternatives.

Figure 11

Base-for-Exchange and Lands Desirable for Acquisition by Alternative



Economics

Figure 12 displays the average annual maintenance and investment costs by alternative. These costs are the total amount of money it would take to implement each alternative each year and maintain the program. Another way of looking at these costs would be that they represent the total annual Forest budget. A more detailed discussion of costs is found in the EIS, pages 69 to 73.

Figure 12

Average Annual Maintenance and Investment Costs by Alternative in Thousand Dollars/Year

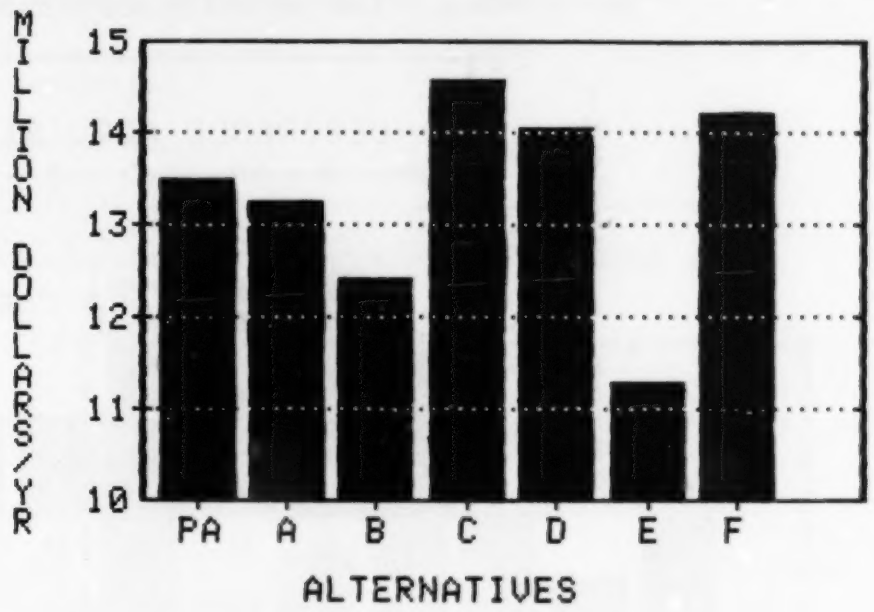


Figure 13 displays the total annual benefits in Decade 1 by alternative. Benefits come from anything we can give a value to such as water, recreation, timber, and livestock grazing.

Figure 13

Total Benefits in Decade 1 by Alternative in Millions of Dollars

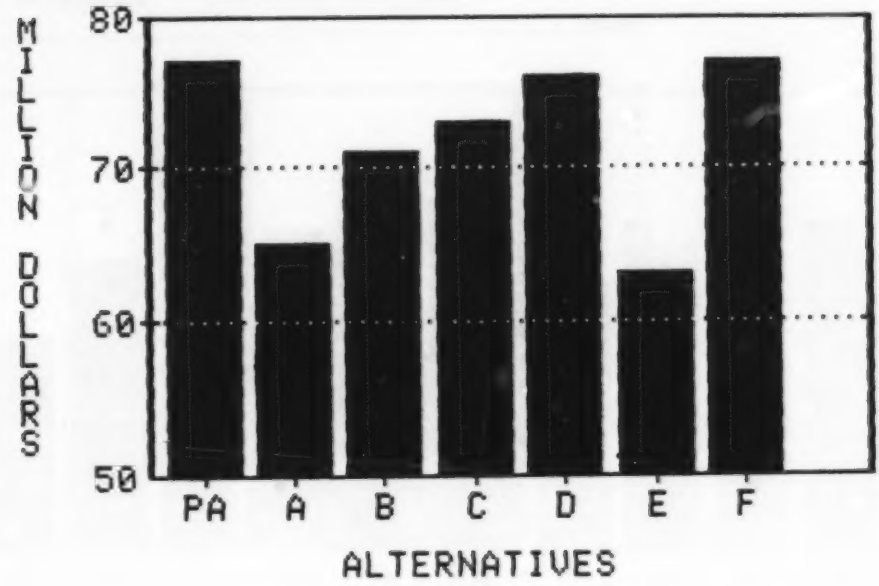


Figure 14 shows expected average annual receipts to the Government in Decade 1 by alternative. Receipts are the dollars returned to the United States from resource production, special land uses, and other permitted uses. By law, 25 percent of these receipts go to County governments for use for schools and roads.

Figure 14

Receipts to the Government in Millions of Dollars by Alternative in Decade 1

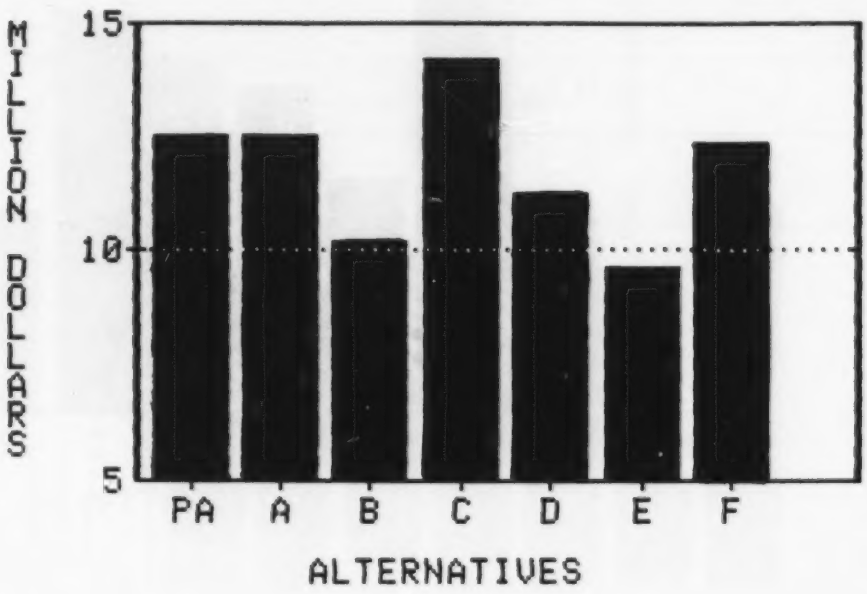
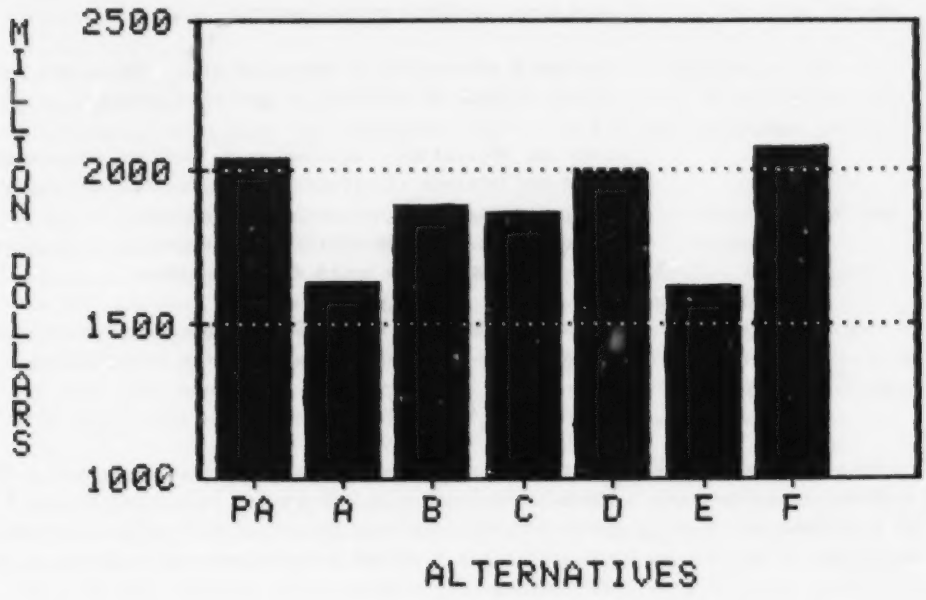


Figure 15 displays a comparison of the Present Net Value (PNV) of each alternative. PNV is the total value of all benefits minus costs, discounted to the present. PNV is cumulative for the 20 Decades modeled in the planning process.

Figure 15

Comparison of the Present Net Value of Each Alternative in Millions of Dollars



THE EFFECTS OF THE ALTERNATIVES

We compared the alternatives against each other to help us come up with the proposed action (PA) or Forest Plan. Results of each alternative were compared as just discussed in the previous section. And, perhaps most importantly, effects of each alternative on the environment were compared to try to develop the best alternative, all things considered.

The effects or impacts of each alternative could be quite significant. But policies and rules called minimum management requirements (MMR's) were developed so that no alternative could go too far in any environmentally harmful direction. The MMR's are found in Chapter 4 of the Forest Plan intermingled with the standards and guidelines, and in the MMR Technical Report available in the planning record.

Chapter 4 of the EIS is dedicated to comparing the environmental effects in detail of each alternative on the environment.

Laws and regulations required us to look at overall environmental effects and at specific kinds of effects whose meanings are somewhat vague at first glance. We looked at the relationship between short-term uses and long-term productivity, at irreversible or irretrievable commitments of resources, and at adverse impacts that could not be avoided.

The following short discussions, tables, and figures summarize our findings about the environmental effects of the alternatives.

Relationship Between Short-Term Uses and Long-Term Productivity

Short-term uses are those that occur over the first 10-15 years while long-term productivity refers to the capability of the Forest to continue producing goods and services over the first five decades and beyond. Short-term uses are timber and firewood harvest, recreation uses, livestock grazing, mining, and special land uses.

Soil and water are the primary resources upon which productivity is based. Short-term uses that damage soils and soil-water relationships impair long-term productivity. Management standards and guidlines provide for protecting long-term productivity by requiring that impacts on soils and water from short-term uses be mitigated and/or that short-term uses enhance soil productivity and water yield and quality.

Minimum management requirements (MMR's) are part of all alternatives and assure that the long-term productivity of the soil and water resource will be maintained. Some alternatives not only maintain long-term soil and water productivity, but would actually enhance productivity. Some ground disturbing activities would result in a minor amount of short-term soil loss and deteriorated water quality, but only for a short time on small areas. Minimum management requirements are explained in Appendix B of the EIS.

Irreversible and/or Irretrievable Commitments

Irreversible commitments are decisions affecting the nonrenewable resources such as soils, minerals, and cultural resources. Irretrievable commitments are the lost production or use of renewable resources. For example, deciding to excavate an archaeological site is an irreversible decision. Once the site is dug up, catalogued, and put on display, the site is gone and will not renew itself, unlike trees or grass. On the other hand, a decision to keep cows out of a young tree plantation for 5 years is an irretrievable commitment because the grass in the plantation that could have fed cattle has been lost because of the need to protect the trees.

Irretrievable losses are calculated by subtracting selected outputs of each alternative from the alternative with the highest output in the first decade.

There were no significant irreversible or irretrievable commitments of resources in dispersed recreation, wild and scenic rivers, visual resources, old-growth, threatened and endangered species, water, and integrated pest management.

Some irreversible soil movement would occur in all alternatives on localized areas. Alternatives A, B, C, and PA would increase this movement. Alternatives D, E, and F would result in the least movement. Use of common variety minerals such as sand, gravel, borrow areas, and rock is an irreversible commitment of this resource on small isolated areas where such minerals occur. This irreversible commitment is directly related to the level of road construction/reconstruction. Alternatives PA, C, D, and F would have the lowest and Alternatives A, B, and E would have the highest levels.

All alternatives would provide for cultural resource surveys before projects can be undertaken. These surveys are done to protect cultural resources from harm when projects are underway, but even with these surveys the potential for damage exists. Alternatives D, B, F, PA, C, A, and E are listed in order from most to least ground disturbance and, therefore, from most to least potential for damage to sites.

Protecting known cultural resources from pilfering and vandalism varies by all alternatives. This would be high priority with the law enforcement funds available.

Irretrievable resource commitments result from decisions to use land in ways that reduce production or use of renewable resources. Irretrievable commitments represent opportunities foregone for the period the Forest Plan is in effect and reflect trade-offs made to integrate multiple-use considerations or meet budget limitations. Irretrievable effects are in Chapter 4 of the EIS.

Employment and Income

Table 1 is a summary of alternatives by employment, income, and population in Decade 1. The year 1977 was used as a base or yardstick to measure the alternatives against. For example, in 1977 timber sales and timber management in Coconino County generated approximately 600 jobs. Alternative A figures show the number of jobs, of that 600, that were attributable to the Coconino National Forest. The numbers under the other alternatives show the change in the number of jobs, up or down, from Alternative A.

Table 1

Summary of Alternatives by Employment, Income, and Population in Decade 1

Sub-area	1977 Base Year	Alternative A	PA	B	C	D	E	F
Coconino County								
Employment								
Timber/ Firewood	600	457	+ 23	- 39	+ 98	- 22	- 109	+ 1
Livestock	152	31	+ 2	0	+ 3	0	- 1	+ 1
Tourism/ Trade	9157	1949	12	- 30	60	- 34	- 102	27
Other	9398	1103	16	- 24	81	- 15	- 82	21
Total Employment (Jobs)	19307	3540	53	- 93	218	- 71	- 294	50
Income(1977 MM$)	363	62	1	- 1	5	- 1	- 6	1
Population	71000	13020	196	-341	803	-262	-1080	163

In aggregate, Alternatives C and E have greater impacts than other alternatives. The other alternatives would have less than 3 percent change in employment, income, or population. Alternative C results in the most revenue and Alternative E has the lowest budget.

Social Effects

For the area as a whole, the activities and scheduled outputs associated with the alternatives considered in detail would result in minor changes in community stability. Communities that currently exhibit a rural or semi-rural atmosphere would not change as a result of Forest management direction proposed by any of the alternatives. Political and social organization would not be affected, and land use patterns would not be expected to change to any measurable level.

None of the proposed management alternatives would be expected to result in any significant change in the present use of National Forest lands or products by minorities. National Forest opportunities would continue to be equally available to all residents of the United States. With respect to employment, minorities and women are hired directly by the agency or obtain contracts from the agency or work for those who do. The level of hiring under the Equal Employment Opportunity (EEO) Program is directly related to the budget. As funding increases, more people are employed directly by the agency and more contracts are issued. Budget reductions cause reductions in public and private sector employment. The alternatives ranked in order of decreasing budgets in Decade 1 are: C, F, D, PA, A, B, and E.

Adverse Environmental Effects That Cannot be Avoided

Unavoidable adverse environmental effects result from managing the land for one set of resource uses at the expense of the use or condition of other resources. Management requirements in prescriptions mitigate most adverse effects by limiting the extent and duration of impacts.

Unavoidable environmental effects would be:

Recreation--A temporary disruption in recreation use and changes in types of available recreation opportunities would result from timber harvest and related road construction in some alternatives. Increased conflict between some user groups and deterioration of some sites would result because of use in excess of capacity and reduced service level management in some alternatives.

Wilderness--In some alternatives, wilderness values would be reduced where localized recreation use exceeds capacity and management is at less than standard service level.

Visual quality—In all alternatives, temporary reduction of or modification of visual quality would occur on timber sales, overstory and other vegetative modifications, slash disposal, mineral and mining related activities, and road construction and reconstruction projects. In some alternatives, natural appearing areas would take on a more modified appearance.

Air quality--In all alternatives, temporary reduction of air quality would occur during planned prescribed burning.

Wildlife and fish--In all alternatives, temporary displacement of wildlife would occur because of timber sales, range and wildlife habitat improvement, and road construction and reconstruction. Increased disturbance to wildlife would be expected where recreation use increases. In some alternatives, increased social and forage competition between elk and livestock would occur because of increased intensities of range management. Increased impediments to wildlife movement because of livestock fencing would occur on some alternatives as range management intensifies. Decreased habitat for wildlife species dependent upon old-growth pinyon-juniper forests would occur because of firewood harvest as well as range and wildlife habitat improvement.

Timber and firewood--Reduced growth and increased mortality would occur in timber stands not used for timber production or where other resources are emphasized. A slight reduction in suitable acres would occur because of construction of timber harvest roads.

Soil and water--In some alternatives, impacts on water quality would continue in some riparian areas because of sedimentation and fecal coliform contamination from livestock grazing. Recreation use in excess of capacity would cause some temporary, localized effects on water quality. Timber activities also contribute to temporary soil movement.

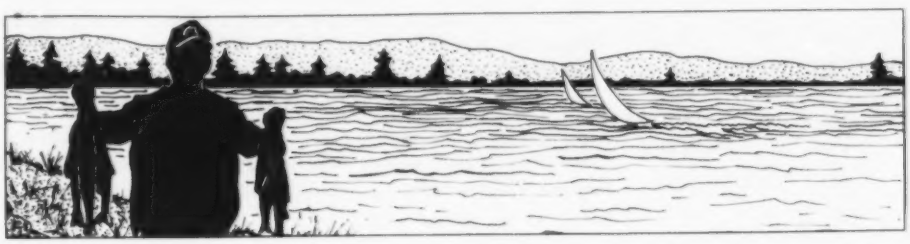
THE CHOICE

We said in the beginning that current management is not adequate to address the significant Issues and to properly manage our limited resources. Our job was to explore a proposed course of action and reasonable alternatives to it to come up with the best possible plan, given legal and other constraints.

The Forest Plan is the Preferred Alternative or Proposed Action and is our answer to improve management. The Forest Plan is designed to resolve the Issues and to provide a mix of commodity and amenity resources. The budget is reasonably attainable.

Major changes from Alternative A, current direction, are discussed individually in the following text:

Recreation



Recreation would be managed at the Standard Service Level. This means that regular operation and maintenance is adequate to keep facilities in operating condition for their design life rather than replacing facilities earlier as they wear out. Recreation users would enjoy a higher quality recreation experience. A program to construct new facilities would result in our providing 94 percent of projected demand for developed use in Decade 1 and 76 percent in Decade 5 as compared to Alternative A with 85 percent and 55 percent.

Increased emphasis in dispersed recreation would allow ORV use but would minimize damage to other resources and cut down on conflicts with other uses. Cultural resources would enjoy increased protection, stabilization of highest priority sites, and interpretation of sites to the public.

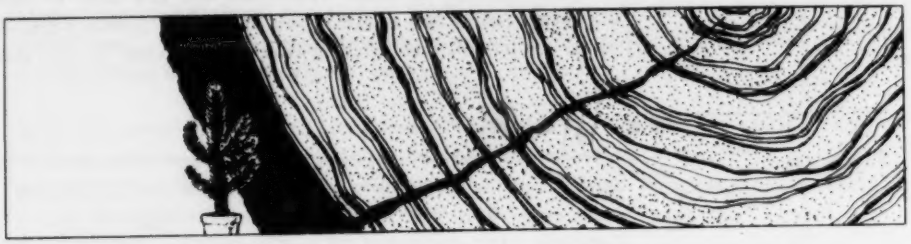
Wilderness

The Forest Plan would provide a wilderness management program adequate to protect the wilderness resource, with a variety of management intensities among the eight wildernesses for which the Coconino is responsible. Patrols and development of trails and trailheads would provide for dispersing use to protect the wildernesses. Trail maintenance would provide resource protection and user safety. This is a major improvement over Alternative A.

Wildlife and Fish

The main change from Alternative A would be increased emphasis in habitat improvement in riparian areas and in habitat for threatened and endangered species. The overall level of dollars spent for habitat improvement would also increase.

Timber



Decade 1 timber sales amount would be increased by 9 percent over Alternative A. However, the biggest change is in accelerating treatments of timber stands to achieve a diverse environment and to reduce the damaging effects of dwarf mistletoe on timber growth and productivity. Firewood management would be significantly increased in the Forest Plan including both administration and enforcement. Areas currently in a mix of pine or mixed conifer with aspen (12,100 acres) would be managed to perpetuate aspen for firewood, wildlife habitat, and visual diversity.

Lands

The lands program would be significantly increased over Alternative A in order to take strong steps toward resolution of the landownership adjustment issue and occupancy trespass, and to bring administration of land uses up to standards for the most cost-effective management.

Soil and Water

The Forest Plan would include an increase in soil and water improvements to hasten the rate of recovery of areas to satisfactory watershed condition. First priority would be riparian areas, coordinated with wildlife habitat improvement. A significant portion would be financed through Knutson-Vandenberg (K-V) funds obtained as deposits from timber sales receipts.

Roads

In Decade 1, there would be fewer miles of road reconstruction and construction than under Alternative A. However, the Forest Plan would have a higher level of maintenance and emphasizes road management to increase the useful service life of the road system and provide better service to users. In addition, the Forest Plan would close and restore to production 400 miles of unneeded roads and travelways in Decade 1.

General Administration

The Forest Plan would reduce these overhead costs through shared services and other similar actions.

Where Things Stay the Same

The range management program is currently balanced between grazing capacity and permitted use. Moderate increases would occur over time due to a continually improving range condition. The fire management program would not change significantly and would continue to emphasize achieving the most cost-effective program and methods for managing fuels and fire, including the use of prescribed and natural fire where appropriate. The minerals program would have a slight increase to be able to better respond to anticipated future demands for common variety materials.

Economics

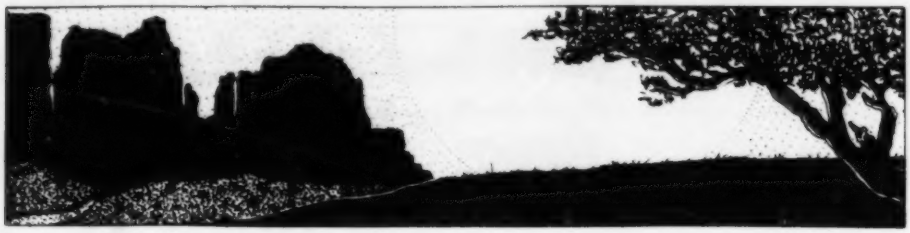
The Proposed Action had the second best economic efficiency rating (Present Net Value or PNV) of alternatives considered in detail. Alternative F had the highest PNV due to the fact that it has the highest recreation investments, meeting 98 percent of projected demand in Decade 1 and 96 percent in Decade 5. Alternative F was not selected for two reasons:

The total budget level and the proportion of the budget in recreation development were above that considered to be achievable in Decade 1. The alternative was not practical.

The Forest Plan has the philosophy that a <u>portion</u> of demand for new developed recreation facilities can most appropriately be met by the private sector and

by State or local governments. There is suitable land available in these ownerships. The Proposed Action would still meet 78 percent of projected demand in the fifth decade.

The Forest Plan is a significant improvement over current management and represents the best overall alternative. We believe that the Forest Plan best upholds the public trust and that the Forest Plan would administer the Coconino National Forest for the greatest good for the greatest number in the long run.



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